

Summary

Strong copper and gold prices are spurring major investment activity in Brazil's mining industry. A variety of planned projects provide US mining equipment and technical service / engineering firms with excellent export opportunities.

We estimate that US\$ 278 million will be spent on mining equipment and services for new copper and gold projects in Brazil over the next 3 years.

Opportunities for US firms exist in virtually all areas of this sector including:

- Semi and Full Autogenous Grinding Mill Circuits
- Semi Mobile In-Pit Crushing Circuits, Semi-Mobile Crushing and CIC-ADR Plants and Long Distance Conveyor Belts.
- Hydro-Metallurgical Extraction Processes.
- Advanced Mineral Process Control Systems.
- Engineering Services.

This report identifies large and medium sized copper and gold mining projects commencing in Brazil during the next three years. Estimated demand for equipment and services for these projects is discussed as well as the competitive factors US firms will face within each of the product / service segments.

Current and Planned Gold and Copper Projects

NEW GOLD PROJECTS

Significant increases in gold production in Brazil are anticipated during the next three years. Since the late 1980's annual gold production in Brazil dropped off dramatically from over 100 metric tons per year (Mtpy) to about 41 Mtpy due to weak gold prices. With strong gold prices many gold projects are scheduled to begin or expand. These projects include:

- Jaguar Mining Inc. (Mineração Serra do Oeste)
- Anglo Gold – (Mineração Morro Velho)
- Wheaton River Minerals
- Yamana Gold, Inc.

All the above mentioned gold projects envision further exploration, test work, and front-end engineering to upgrade their resource base and increase mineable reserves.

Jaguar Mining Inc.

Jaguar owns a gold project that involves the exploitation and ore dressing of ten mineral properties, all of them located in the Quadrilátero Ferrífero (Iron Quadrangle), the most prolific gold-bearing area in the state of Minas Gerais, within a radius of 50 km from Belo Horizonte. The expected life of the project is over 12 years and has an expected average



Current Gold Production in Brazil

Controlling Company	Subsidiary*	Mine Name	Estimated Yearly Production (troy ounces per year)
AngloGold	Mineração Morro Velho	Cuiabá, MG	160,000
	Mineração Itajobi	Córrego do Sítio, MG	30,000
	Mineração Serra Grande	Crixás, GO	190,000
CVRD		Igarapé Bahia, PA (projects in PA & MG)	350,000
Rio Tinto	Rio Paracatu Mineração	Morro do Ouro, MG	250,000
Eldorado	São Bento Mineração	Santa Bárbara, MG	100,000
Desert Sun Mining Co.	Jacobina Mineração	Jacobina, BA	100,000
Yamana Gold, Inc.		Fazenda Brasileiro, BA	100,000
Jaguar	Mineração Serra do Oeste	Sabará and Caeté, MG	25,000
Total:			1,305,000 (40.6 Mt)

*Subsidiaries are fully owned except for AngloGold's Mineração Serra Grande that is 50% owned by Newico and Rio Tinto's Rio Paracatu Mineração that is 49% owned by Kinross.

production of 100,000 ounces per year (opy). An extensive complementary exploration campaign is underway and Jaguar may end up producing 200,000 opy in a 15-year project life.

Production is projected to be bullion in the case of oxide mineralizations and ROM (Run-of-mine) in the case of sulfide mineralizations. ROM from future sulfide ores will be sold to AngloGold, which will process them in its Queiróz Plant. The Plant has a comminution circuit and separate circuits for refractory and non-refractory sulfide ores circuits.

AngloGold, CVRD and RTZ sold these mining sites to Jaguar Mining, as they were considered small for such senior companies. However, they are economically viable, if operated under an integrated logistic approach, with low overhead, and managed by a seasoned staff knowledgeable and experienced in gold geology and operations in the Iron Quadrangle region.

This fact is paramount to understanding the kind of equipment and services that this project will require. Jaguar has a 1,000 Mt/day oxide plant in operation and a 1,000 Mt/day contract milling capacity with AngloGold. As well, Jaguar plans to start up a new 1,500 mt/d oxide plant by the end of 2004.

Jaguar paid US\$800,000 for seven mineral concessions in the Minas Gerais state from AngloGold. The agreement also foresees Jaguar paying AngloGold a sliding scale net smelter royalty (NSR) from 1.5% to 4.5% determined by the gold price.

AngloGold – Mineração Morro Velho

The MMV Cuiabá Project encompasses the production of 2.2 million oz of gold over a period of 15 years. This project is expected to increase Anglo's gold production by 150,000 opy, increasing the current production of 160,000 opy to 310,000 opy. The expansion project has an estimated CAPEX of US\$ 109 million and the feasibility study is due on July 2004 (Engineering and Mining Journal, October 2003, page 25). Final "green lights" decision will take place thereafter.

WheatonRiver

Wheaton River Minerals has recently acquired the Amapari gold project in Brazil's northern state of Amapá from AngloGold. The Canadian company is confident Amapari can be brought to production in 2005 and predicts it will increase its annual production to over 500,000 oz of gold equivalent in 2006. Reserves are reported to be about 1.4 million ounces (90% recovery). Resources are reported to be 1.7 million ounces in the measured + indicated category. The property has 1.0 million ounces in the inferred category.

Yamana Gold, Inc.

Yamana Gold's Chapada project is their second project in the state of Goiás. The Chapada project will follow their first project, the Fazenda Nova project that is now going through forthright start-up.

NEW COPPER PROJECTS

All of Brazil's new copper projects are being developed by Brazil's largest mining firm, Companhia Vale do Rio Doce (CVRD).

Companhia Vale do Rio Doce (CVRD)

CVRD has an ambitious and well-conceived plan to become one of the world's largest copper producers by 2007. The investment plan exceeds US\$ 2.6 billion. Currently, CVRD does not produce any copper and Brazil imports nearly US\$ 300 million in copper metal and ore annually.

CVRD is predicting yearly copper production of 721,000 Mtpy once all of their projects are operating. It is anticipated that these projects will also boost CVRD's gold production from its currently 11 Mtpy to 44 Mtpy (approximately 1,415,000 ounces per annum).

CVRD's main copper-gold projects are:

- The Sossego project, with an estimated Capital Expenditure (CAPEX) of US\$ 384 million, has an estimated annual production is 455,000 Mtpy of copper concentrate (140,000 Mt of copper metal). Reserves are

estimated at 196 million Mt grading 1.02% copper and 0.3 g/t gold. Startup is mid-2004.

- The Salobo project, currently in its final feasibility consolidation phase, has an estimated CAPEX of US\$ 1.05 billion. Estimated annual average production is 100,000 Mtpy of copper metal. Estimated startup is 2007.
- The Cristalino project, currently with its Bankable Feasibility Study completed, has an estimated CAPEX of US\$ 500 million. Estimated annual average production is 90,000 Mtpy of copper metal. Estimated startup is 2006.
- "Alvo 118" or 118/Oxide project is currently starting construction. The project's detail engineering phase has been completed. Its estimated CAPEX is US\$ 120 million. Estimated annual average production is 45,000 Mtpy of copper cathodes using the solvent extraction-electro winning (SX-EW) process. Startup is December 2005.
- The Alemão / Igarapé Bahia Project has an estimated CAPEX of US\$ 600 million. Estimated copper metal production is 155,000 Mtpy. For technical and economic reasons, CVRD plans to incorporate the Igarapé, Bahia Phase IV project into the Alemão project. A phased startup is envisioned (Phase 1: 2004 and Phase 2: 2006).

CVRD Copper and Gold Projects*

Project Name	Status	Estimated Production Mt/year		Reserves (millions of Mt)	Copper Content
		Copper (000)	Gold		
Sossego	Operating	140	3.5	250*	1.0%
118/Oxide**	Feasibility study under way	45	n/a	78*	0.85%
Salobo	Final feasibility study	100	5.0	302	0.98%
Alemão	Conceptual Study	155	8.9	200	1.15%
Cristalino	Pre-feasibility study	90	1.8	261	0.73%

* Sossego, Salobo are fully owned by CVRD. BNDES owns 50% of 118/Oxide and Cristalino and 33% of Alemão.

**Reserve levels to be confirmed by drilling and /or geological modeling currently underway. Source: CVRD

Three of these projects are jointly owned by CVRD and Brazil's federally controlled development bank (BNDES). BNDES also currently holds a 2.86% stake in CVRD. The five target projects are located in the Carajás region. All but Alvo 118 will also produce significant amounts of gold. Total Gold production when complete is 26.3 Mtpy of gold metal (845,660 ounces).

The successful implementation and continued operation of the Amapari, Cuiabá, Quadrilátero, Fazenda Nova and Chapada projects will require the use of the most updated and efficient technologies available.

Oxide ores will typically call for Carbon ADR (Adsorption - Desorption - Recovery) Circuits, such as CIC (Carbon in Column), CIP (Carbon in Pulp) and CIL (Carbon in Leaching). Heap Leach ADR - CIC circuits will tend to be the most common, with the utilization of Pressure Zadra Stripping Vessels in closed circuit with Electrowinning (EW) circuits. CIC Semi-mobile plants (a forte of US associated technology) could be advantageously used in the smaller projects: The same plant would be moved to the next mining site location to process additional oxide ores within the area of the project. Complementary Acid Wash and Carbon Reactivation Circuits will be required, as well as Agglomeration facilities in the case of Heap Leach projects.

Sometimes, in remote locations and/or when not only gold, but also silver, plays a significant role, a Merrill-Crowe Plant may be the most appropriate solution. This application is supplied as a whole unit, entailing clarification, de-aeration, and filtration (zinc precipitation). Both CIC-ADR and Merrill-Crowe plants apply to gold solutions, while CIP and CIL facilities apply to gold concentrate pulps.

Refractory sulfide ores call for either Roasters or Autoclaves to remove sulfur and expose gold for further leaching (typically CIL) and recovery operations. Once again, the US is a premier supplier of this kind of equipment and technology.

After full implementation CVRD's projects (2007), it is envisioned that Brazil will be one of the world's top five copper producers. Both Alvo 118 and Salobo will require the use of hydro-metallurgical processes, providing US firms with opportunities to sell more sophisticated technologies.

Map of Selected Gold and Copper Projects



The best prospects for mining and mineral processing equipment, technologies, and engineering services to be used in these projects are as follows:

Summary of Estimated Project Purchases for Major Market Segments		
Segment	Total Estimated Expenditures	Comments
SAG /FAG	US\$ 50 million	Total value of CVRD projects.
SMIPC & LDBCS	US\$ 120 million	US\$ 95 million – CVRD. US\$ 25 million – Gold-Only Projects.
Copper & Gold Hydro-Metallurgical Extraction Processes	US\$ 85 million	US\$ 35 million – Alvo 118. US\$ 50 million – Gold-Only Projects.
ACS	US\$ 18 million	US\$ 15 million – CVRD
Engineering	US\$ 5 million	
Total:	US\$ 278 million	US\$ 195 million for CVRD projects. US\$ 78 million for Gold-Only projects.

Comments: We estimate that the Quadrilátero, Cuiabá, Amapari and Chapada projects will add at least 1,000,000 oz Au / year to Brazil's production in the next five years.

Best Prospects: Semi Autogenous and Full Autogenous Grinding Mill Circuits

Comminution circuits, encompassing both crushing and grinding operations, account for a high percentage of mine costs including an estimated 30% to 40% of capital costs and up to 50% of the operating costs. Accordingly, SAG's and FAG's represent a major opportunity for US firms in Brazil.

In particular, we estimate that CVRD will spend approximately US\$ 50 million for comminution circuit equipment during the next few years on their planned Copper and Gold projects. In particular, SAG/FAG - Ball Mill circuits will be required for CVRD's Cristalino, Salobo and Alemão projects.

CVRD has already purchased and commissioned a 20 MW, 42 ft diameter SAG mill and two 10 MW Ball Mills for their Sossego copper project. Over the next five years, we estimate that CVRD will require five additional SAG/FAG mills for its copper projects, equating to total expenditures of US\$ 50 million (US\$10 million per SAG/FAG mill). This estimate does not take into account other equipment integral to comminution circuits that can be supplied locally (under license) such as pebble crushers and large ball mills.

The main factors affecting competition in this market are:

- Generally, purchasers will seek out those manufacturers who have a proven track record successfully designing, building and installing mills similar to what they are seeking.
- Suppliers must show evidence of having had implemented equivalent grinding mills with similar ores and feed rates.
- Purchasers will seek evidence that former clients of the supplier were satisfied with the reliability of the equipment and that the operating parameters were very close to those specified in the contract.
- Evidence that the supplier has a history of providing solid technical assistance to their clients during test work and pilot plant phases is also very important.

Price will definitely play a major role in this market because of the relatively high cost of comminution equipment. Presently there are no Brazilian SAG/Ball mill manufacturers but local industry can manufacture most of the components under license, with the exception of latest generation liners and drives (gearless). The technology in terms of maximizing throughput while minimizing power draw and metal consumption (liners and balls) is mastered by few companies that have developed the incremental knowledge associated with these improvements.

US suppliers will be competing with Canadian, Swedish, and Finish technology-holders and fabricators, most of which have large and well-structured fabrication facilities in the US.

Best Prospects: Semi Mobile In-Pit Crushing Circuits, Semi-Mobile Crushing + CIC-ADR Plants, and Long Distance Conveyor Belts

Considering that Semi Mobile In-Pit Crushers (SMIPC) and Long Distance Belt Conveying Systems (LDBCS) are more economical than truck transport for deeper mines, mines that rapidly increase in depth and mines with longer life spans, we believe that four of CVRD's projects are likely to use SMIPC/LDBCS systems. Those projects are Alvo 118, Alemão, Cristalino, and Salobo.

We estimate that CVRD copper projects will require eight SMIPC units over the next five years, with capacities ranging from 600 to 3000 tph. The market size for LDBCS is estimated at five units with average capacity of 1800 tph and an average length of five kilometers. Considering a unit price of US\$ 4 million per unit for SMIPC and US\$ 2.5 million per kilometer for LDBCS, we estimate CVRD will spend approximately US\$ 32 million for SMIPC equipment and US\$ 63 million for LDBCS equipment over the next five years.

The Quadrilátero project will likely require Semi Mobile Crushing/CIC-ADR Plants with approximate capacity of 150 tph (calculations made based on the oxide ore projects, metallurgical recovery of 83% and 24 hour per day, 360 days per year operation). We estimate expenditures of approximately US\$ 25 million for Semi Mobile equipment for this project.

While there are virtually no Brazilian suppliers of In-Pit Crushers, nor local companies with significant experience related to LDBCS, there are a number of companies with experience in the design and implementation of belt conveyors for conventional distances. As well, there are some local companies that could jointly supply the elements required to build a LDBCS. MBR's Pico / Andaime Terminal LDBCS are one such example.

The design code used for belt conveyors in Brazil is the US CBMA (Conveyor Belt Manufacturers Association) code and the Brazilian companies can master most calculations and fabrication procedures that are implied in a LDBCS. Exceptions would be starting conditions and modern couplings, tension redistribution, and corded belt segments.

With this in mind, the main factors that will affect competition in the LDBCS market are:

- Proven mastery of the technological aspects specifically associated with long distance belt conveyors. A proven record of successful equipment installation in similar operations is mandatory.
- Willingness to team up with local civil construction companies and local equipment providers.
- Willingness to take a lead on turnkey contracts.
- Price and special conditions will be a decisive factor in winning contracts, especially considering the fact that local firms master much of the required technology. Local firms will use a cost leadership strategy, offering lower prices to compete with more costly but value-added proposals of experienced international firms.

Main competitors for US firms in Brazil are mostly of German origin who have a strong presence in Latin America's mining equipment market. In Chile, for example, Krupp supplied the long distance conveying systems for Collahuasi (8,200 tph), and Los Pelambres/Radomiro Tomic (9,615 tph).

The situation for the SMIPC market is, by contrast, very similar to that of the market for Semi Autogenous and Full Autogenous Grinding Mills. There are no Brazilian suppliers of this kind of equipment, even though the Brazilian industry masters the processes required to design and build some components for this kind of equipment. For example, the Brazilian steel industry is technologically well developed and can offer the basic materials required for SMIPC's, including steel liners.

Competition will largely be based on the technologies involved in the design of the In-Pit Crushers. We believe that the two-shaft soft breaker type of SMIPC will be technically out of competition, due to the relatively high hardness of the diverse copper-bearing ores.

Best Prospects: Copper and Gold Hydro-Metallurgical Extraction Processes

Out of the projects to be undertaken by CVRD in the period 2004-2007, Alvo 118 and Salobo will likely make use of Hydro-Metallurgical Extraction Processes, given the characteristics of the ore. Alvo 118 will make use of SX/EW process to produce

copper and the studies for what specific process will be used in the Salobo project are still underway.

Based on the information currently available, it is difficult to estimate the size of this market because the final decision on the process routes to be used in the Salobo project has not yet been made.

The importance of the US\$ 1.05 billion Salobo Project for the final determination of Hydro-Metallurgical Extraction Processes market size stems from the fact that this project design throughput is five times larger than Alvo 118.

We roughly estimate that CVRD will spend approximately US\$ 35 million on extraction processes, including equipment and associated technological fees for Alvo 118. For the gold-only new and expansion projects of Amapari, Quadrilátero, Cuiabá, and Chapada, we estimate that approximately US\$ 50 million will be spent for technology and equipment associated with Hydro Metallurgical (Carbon ADR processes) Extraction Processes.

In this segment, US firms will face competition from Canada, Australia, and South Africa. A willingness to work with clients to optimize the process for any specific type of ore will assist US firms in winning contracts. For example, BetzDearborn, in cooperation with CODELCO Chuquicamata developed the Deardocox process, which increased leach recovery by 1% to 5%.

US companies that want to compete in this segment must invite CVRD's key personnel to their laboratories to show that they can offer tailored solutions for their needs. A record of successful implementation of Hydrometallurgical Extraction Processes in other similar operations is also key for success in this segment.

Best Prospects: Advanced Mineral Process Control Systems (ACS)

Advanced Mineral Process Control Systems, both at Expert and "Intelligent" (Adaptive) levels, have proved to be extremely helpful tools to optimize plant performance, being able to increase throughput by approximately 5% to 12%. Other significant gains are related to online optimization of recoveries, power draw, reagents, uptime, variability's, etc. A typical expert-based adaptive control system ranges from US\$ 0.250 million to US\$ 1.3 million. US\$ 0.5 million will be considered in this report as the current average price for a typical system.

By the same token, it is of paramount importance the coordination between the transportation system (trucks) and the mining equipment, since the ideal is to minimize the idle time of the mining equipment. This presents an opportunity for companies that can offer efficient and flexible control systems for medium sized mining companies. It is worth noting the example of a gold and silver plant installed by Newmont Mining in Kori Kollo (Bolivia) that has a grinding capacity of 641 tph. It can be seen that at this plant, the automatic system allows for

the detailed monitoring and control of the whole plant, in every step of the process.

CVRD's upcoming copper/gold projects will call for ACS mostly in the areas of crushing, grinding, and concentration. In addition, CVRD will most likely adopt the philosophy of an optimized coordination between mining and milling with the associated requirements in terms of control systems. The SmartMine System implemented by CVRD-owned MBR in its Vargem Grande Iron Ore Project is worth citing.

In order for CVRD to be competitive in the copper and gold markets, the efficiencies of the future plants must be commensurate with those achieved by international competitors. Over the past few years, a number of important copper operations have been upgraded not only in terms of equipment, but also with regard to their regulatory control systems and online optimizing ACS.

For example, CODELCO undertook a modernization of some of its plants, adding state-of-the-art Mineral Process Advanced Control Systems. In fact, most high capacity mineral processing plants built in Chile over the past four years incorporate this technology. ACS's are being implemented at a very fast pace atop existing regulatory control systems in the mining industry in the US, Canada, Australia, South Africa, Sweden, Finland, and Russia. In order for CVRD operations to be competitive, all projects planned over the next few years will utilize Advanced Process Control Systems.

CVRD projects will most likely require thirty separate ACS's and we estimate that the various gold-only projects discussed in this report will require six ACS units. Accordingly, we estimate that approximately US\$ 18 million will be spent on ACS's in the copper and gold segment in Brazil during the next two to three years.

Currently, there aren't any Brazilian suppliers of expert or intelligent process control systems for the mining industry. The competition for US firms (Optima Powerware, Knowledge Scape, Pavillion, and others) will essentially be Canadian Minnovex and Finish Metso (formerly Svedala-CISA). It is worth noting that Brazil has made a significant progress in terms of implementing Advanced Control Systems in the past two years (CVRD and RTZ).

The principal competitive factors in this market are:

- Ability to effectively optimize throughput, recovery, and power draw online. This holds especially important since sales are mostly performed on a success fee basis. Systems including "heavy" Nonlinear Optimizers will have a decisive competitive advantage.
- Reliability of the systems for the operating conditions prevailing where they will be used. It is expected that these systems will have close to 100% availability and that in case of failure; the design incorporates some alternative online optimizing control path above regulatory control to avoid under-performance.
- Ability of the systems to correctly describe the physical phenomena-taking place (rules and models) and to properly configure Neural Network – Predictor Models.

- Appropriateness of use of both crisp and fuzzy rules at expert level.
- Excellency in technical assistance and training. Due to the nature of these products, this is a very important parameter. A local office staffed with hands-on professionals with proven experience is important. The willingness and ability to interface and train personnel to correctly use the system is paramount. The best market strategy seems to be to motivate and establish a good rapport with both operating and managerial echelons and to gain their support before reaching Directors, VPs and eventually the CEO.

Best Prospects: Engineering Services

Foreign engineering companies will have a chance to participate in Front End Engineering Studies (FEES) only by working in consortia with local companies. For example, the FEES consortia for CVRD's Sossego Project included local engineering companies Minerconsult and ECM working with US – based KVAERNER.

Considering that FEES (from conceptual projects to bankable feasibility studies) typically account for 1% of CAPEX, we estimate this market segment for US companies to be US\$ 5 million.

Best Prospects: Medium-Sized Gold Projects

The principal factors affecting competition in this market are:

- Offering creative solutions (Semi-Mobile CIC – ADR Plants is an example).
- Making use of Online Optimization (ACS's) in the solutions to be proposed, quantifying the gains in a sound manner.
- Ability to be flexible in terms of embedding equipment and technologies into existing facilities and in terms of disposition to slightly modify standard equipment to accommodate special Brazilian conditions.
- Ability to understand that the Design Criteria for a gold undertaking in Brazil may be very different from the ones traditionally used in the US: different climate, operational culture, legal framework, etc.
- Ability to offer cost-effective equipment solutions that take into consideration the fact that some of the new gold projects to be undertaken in Brazil do not have the benefits associated with economies of scale to be found in larger projects.

End-User Analysis

CVRD's ongoing copper-gold projects (US\$ 2.6 billion) will definitely include SAG and/or FAG mills, as well as a potential for new copper hydro-metallurgical extraction routes, as well as for the other equipment, technologies and engineering services previously addressed in this document. CVRD is by far the largest Brazilian potential end-user of the equipment, technologies, and engineering services studied in this report. It

is Brazil's largest mining company, the third largest in the world and accounts for more than 30% of Brazilian mineral production in terms of value. Its annual production is approximately 160 million Mtpy of processed iron ore, 30 million Mtpy of iron ore pellets, 11 Mtpy of gold metal, 1.5 million Mtpy of manganese ore and 550,000 Mtpy of processed potassium chloride (KCl).

CVRD also holds significant stakes in other companies in Brazil and abroad:

- Iron ore: SAMARCO (jointly owned with BHP), MBR (CVRD purchased CAEMI and now owns about 62% of MBR), former FERTECO mines, former SAMITRI's mines;
- Bauxite: Mineração Rio do Norte;
- Alumina and aluminum: Alunorte, Albrás, Aluvale, Valesul
- Kaolin: Pará Pigmentos (with Mitsubishi);
- Phosphate and fertilizers (Fosfertil);
- Wood, pulp and paper: FRD, Celmar and Cenibra;
- Steel manufacturing: CST, California Steel, Usiminas;
- Ferro-alloys (SIBRA), Silicon-manganese (CPFL), Railways (FCA, EFVM), Sea transportation (Docenave), Energy generation (4.5 MW) and Logistics services;
- Seven iron ore pellet plants in partnership with foreign companies from Italy, Spain, Japan, and Korea.

CVRD was a state-owned company until May 1996 when it was privatized. Total sales are nearly US\$ 6 billion, not including its stakes in the above listed companies. CVRD is organized into two separate divisions, the Southern System and the Northern System.

The operations of the Southern System include all mines, pelletizing plants, private railways and ports situated in the central / southern part of the country. The operations of the Northern System include all mines, private railways and ports situated within the northern part of Brazil and has a current production of 44 Mtpy of processed iron ore and 1.5 Mtpy of processed manganese ore. A new pelletizing plant is currently being constructed at their port facility in São Luis.

All new copper-gold projects herein described are located in the Northern System. Online updated information on production, corporate organization, and ongoing projects can be found at CVRD's Web Site: www.cvr.com.br. Information on the companies pioneering the retake of the gold industry in Brazil can be accessed in their web sites:

- www.jaguarmining.com
- www.anglogold.com
- www.yamana.com
- www.wheatonriver.com.

Market Access

Although Brazil has made substantial progress in reducing traditional border trade barriers (tariffs, import licensing, etc.), tariff rates in many areas remain high and continue to favor locally produced products. Brazil's barriers to trade are a cause for concern for the US Government and the European Union (EU), both of whom continue to work through regional trade accord negotiations and at the WTO level to influence tariff and non-tariff barriers.

This report touches upon a broad range of trade regulations that may affect US companies seeking to export to Brazil. However, due to ongoing negotiations within the Free Trade Agreement of the Americas (FTAA) and Brazil's de facto leadership of the Southern Cone group Mercosul, the information in this report may become quickly dated.

To read more about Trade Regulations, please click on the report below:

<http://www.focusbrazil.org.br/ccg/chapters/Trade%20regs.pdf>

Trade Shows

The most important mining event in Brazil is the "Exposibram" congress and trade fair sponsored by the Brazilian Mining Institute / IBRAM. It normally features a series of technical seminars and a trade fair. This event will next be held on September 20 to 23, 2005. It is held every two years in Belo Horizonte and is the best opportunity to meet all kinds of companies from this sector in Brazil.

Several other meetings in the mining sector are also organized by IBRAM, and are co-sponsored by the most important companies of the mining sector in Brazil. IBRAM is the leading association of mining companies in Brazil (www.ibram.org.br).

Another important event is the Brazilian Geological Congress, sponsored by the Brazilian Geological Society (www.42cbg.org.br). This event will take place from October 17 to 22, 2004.

To the best of our knowledge, the information contained in this report is accurate as of the date published. However, The Department of Commerce does not take responsibility for actions readers may take based on the information contained herein. Readers should always conduct their own due diligence before entering into business ventures or other commercial arrangements.

This report was written by senior trade specialist Mauricio Vasconcelos with the assistance of Ivan Machado PE of TechnoMine Services LLC and John Mueller, project consultant.

Other Resources and Key Contacts

- For more information about export opportunities in this sector contact US Commercial Service Industry Specialist Mauricio Vasconcelos at: mauricio.vasconcelos@mail.doc.gov
- US Country Commercial Guide for Brazil: www.FocusBrazil.org.br/ccg
- US Commercial Service Market Research Worldwide: <http://www.export.gov/marketresearch.html>
- Brazilian Ministry of Mines and Energy (MME): www.mme.gov.br
- Brazilian Mining Institute (IBRAM): www.ibram.org.br
- Brazilian Geological Service (CPRM): www.cprm.gov.br
- CVRD: www.cvrd.com.br
- Mineração Caraíba is the only current producer of metallic copper in Brazil and has an output of nearly 32,000 mtpy. Its deposits are due to expire by 2006: www.minacaraiba.com.br
- Brazilian Metallurgy and Materials Association (ABM) - www.abmbrasil.com.br
- Brazilian Association of Machinery Manufacturers (ABIMAQ): www.abimaq.org.br
- Brazilian Mineral Production Department (DNPM): www.dnpm.gov.br
- National Association of the Civil Construction Aggregates Producers (ANEPAC): www.anepac.org.br
- Brasil Mineral is a specialized monthly mining magazine, published by Signus Editora: www.signuseditora.com.br
- Minerios is another specialized monthly mining magazine: www.minerios.com.br
- The mining school of the Federal University of Ouro Preto (UFOP) publishes the quarterly REM (Revista Escola de Minas): www.rem.com.br

With its team of industry sector experts, the US Commercial Service can assist US exporters gain entry into the Brazilian market through market research reports, matchmaking services and advocacy programs. The Commercial Service has offices in Brasília, São Paulo, Rio de Janeiro, Belo Horizonte and Porto Alegre. You can visit us at www.FocusBrazil.org.br or contact us at sao.paulo.office.box@mail.doc.gov.